

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An information processing apparatus, comprising:

determining means for determining an element or procedure of an object from a plurality of elements or procedures of the object based on time information associated with the element or the procedure, wherein each of the plurality of elements or procedures has associated therewith information related to time, and said determining means selecting a process at a timing of applying the time information based on the determined element or procedure of the object, wherein the object is a component of the process;

executing means for executing a the process based on contents of the process the determined element or procedure of the object by said determining means; and

object management means storing said object for managing its operation and status;
wherein

in the object to be processed by said information processing apparatus, multiple different time-restricting condition-conditions may be imposed on every uniquely identifiable element or procedure defined in the object, and

said determining means selects an appropriate process at a timing of applying the time information.

2. (Original) The information processing apparatus according to claim 1, further comprising

event notification means registering and holding an event condition based on external information, for notifying said object management means about an event that occurs when the condition is satisfied; wherein

said event notification means and said object management means each include interface means for performing an event input/output operation; and

said executing means changes the process in an event-driven manner in response to said event input/output operation.

3. (Previously Presented) The information processing apparatus according to claim 1, wherein

said determining means has object generating means for newly generating, after determination of a process related to specific contents of the element or procedure of the object by applying time information, an object based on the result of determination; and

said executing means performs a process based on said generated object.

4. (Original) The information processing apparatus according to claim 1, wherein

in the object to be processed by said information processing apparatus, a plurality of contents of elements and procedures of said object are prepared, said plurality of contents of elements and procedures are fully contained in said object as a single object, and contents are selectively determined by processing the time information.

5. (Original) The information processing apparatus according to claim 1, wherein

in the object to be processed by said information processing apparatus, contents of an element or procedure of said object can be described in a format of external reference; and

in determining contents of an element or procedure of an object, when any item requires external reference for resolution, said determining means requests said object management means for the resolution and determines the contents of processing.

6. (Original) The information processing apparatus according to claim 5, wherein

said object management means has

storing means,

searching means for searching for an object stored in a storage area of said storing means,

and

communication means for obtaining information through a network, and

in response to a request from said determining means, searches and obtains necessary information under control or through the network, and notifies said determining means about the

contents, whereby the item requiring external reference is resolved and the contents of processing are determined.

7. (Original) The information processing apparatus according to claim 1, wherein the object to be processed by said information processing apparatus has such a format of representation that a specific value or method related to its element or procedure is determined for the first time when said determining means applies the time information.

8. (Original) The information processing apparatus according to claim 1, wherein when said determining means applies time of activation, the object to be processed by said information processing apparatus has a data value or method related to its element or procedure determined.

9. (Original) The information processing apparatus according to claim 1, wherein when the determining means applies virtual time of activation, the object to be processed by said information processing apparatus has a data value or method related to its element or procedure, based on the condition, adapted and determined.

10. (Original) The information processing apparatus according to claim 9, wherein the object to be processed by said information processing apparatus has contents of its element or procedure described in a form of a time-related function, and when said determining means applies the time information, a data value or method related to its element or procedure is determined.

11. (Canceled).

12. (Original) The information processing apparatus according to claim 1, wherein in the object to be processed by said information processing apparatus, description simultaneously including descriptions based on a plurality of time constraints may be made as

long as there is no time crossing, on every uniquely identifiable element or procedure defined in the object; and

said determining means selects an appropriate process at a timing of applying the time information.

13. (Original) The information processing apparatus according to claim 1, wherein time constraint related to an element or procedure defined in the object to be processed by the information processing apparatus is described as a condition of invalidating the corresponding element or procedure.

14. (Original) The information processing apparatus according to claim 1, wherein in determining contents of an element or procedure related to the object to be processed, when there is no item that satisfies a time constraint, said determining means makes a notification to said object management means and any process related to said object thereafter is stopped.

15. (Original) The information processing apparatus according to claim 1, wherein in determining contents of an element or procedure related to the object to be processed, when there is no item that satisfies a time related condition, said determining means makes a notification to said object management means and executes a process based on an object appropriately selected by said object management means.

16. (Original) The information processing apparatus according to claim 12, wherein some of the time constraints imposed on the element or procedure defined in the object to be processed by said information processing apparatus may mixedly include descriptions in accordance with different scale designations; and

said determining means includes means for selecting an actual process by mapping time constraint scales imposed on the element or procedure of the object to a single time axis.

17. (Original) The information processing apparatus according to claim 12, wherein some of the time constraints imposed on the element or procedure defined in the object to be processed by said information processing apparatus may mixedly include descriptions in accordance with different methods of designation including absolute time designation, relative time designation or interval designation; and

said determining means includes means for selecting an actual process by using a predetermined priority with respect to descriptions of time constraints imposed on the element or procedure of said object.

18. (Original) The information processing apparatus according to claim 5, wherein when the object to be processed by said information processing apparatus is generated from an arbitrary time-constrained object as a parent, the object inherits characteristics related to the element and procedure defined in the parent object as well as time constraint imposed on each of the element and procedure.

19. (Original) The information processing apparatus according to claim 18, wherein the object to be processed by said information processing apparatus inherits each said time constraint related to the element and procedure defined by said parent object, and when a process related to the corresponding element and procedure is to be overridden, asks the parent object for delegation of authority to obtain permission of execution.

20. (Original) The information processing apparatus according to claim 18, wherein the object to be processed by said information processing apparatus individually inherits or refers to only the time constraint related to each of the element and procedure defined by said parent object, whereby a process dependent on a part of a process of said parent object is described.

21. (Original) The information processing apparatus according to claim 20, wherein the object to be processed by said information processing apparatus asks said parent object for permission, when it individually inherits or refers to only the time constraint related to each of the element and procedure defined by said parent object.

22. (Previously Presented) The information processing apparatus according to claim 19, wherein

the object to be processed by said information processing apparatus operates a timing of linked processing among objects, by re-arranging, through an off-set designation, time constraints related to the element and procedure defined by said parent object.

23. (Original) The information processing apparatus according to claim 1, wherein said executing means has information presenting means for presenting to the user, at a timing of switching of a process based on contents of an element or procedure of the object determined by said determining means, information related to a change in the process, and at a timing when object behavior changes with time, presents information related to the change in the object behavior to the user.

24. (Original) The information processing means according to claim 2, wherein said object management means registers a timing of determining contents of the element or procedure related to the object by the determining means in the event notification means beforehand, to perform scheduling of the timings of determining operations thereafter.

25. (Original) The information processing apparatus according to claim 24, wherein said object management means has registering means for registering the timing of determining contents of the element or procedure related to the object by said determining means in the event notification means to cause event firing at a timing earlier than a defined time; and

after receiving an event from said event notification means, earlier than a timing when contents of the element or procedure are changed by said determining means, information related to a change in behavior of said object is presented to the user.

26. (Original) The information processing apparatus according to claim 7, wherein the object to be processed by said information processing apparatus realizes a user interface, and a method of displaying a component is changed in accordance with applied time information.

27. (Original) The information processing apparatus according to claim 7, wherein the object to be processed by said information processing apparatus realizes a user interface, and
a method of operation assigned to said component is changed in accordance with applied time information.

28. (Original) The information processing apparatus according to claim 27, wherein the object to be processed by said information processing apparatus realizes a user interface, and
at a timing when object behavior changes with time, the change in said object behavior is presented to the user by changing a component display through animation.

29. (Original) The information processing apparatus according to claim 1, comprising means for performing information processing involving an object of which element or procedure can be described based on time information and an object not dependent on time information.

30. (Currently Amended) An information processing method, comprising the steps of:

determining, on an object of which element or procedure can be described at least on information related to time, contents of the element or procedure of the object based on time information and selecting an appropriate process at a time of applying the time information, wherein the object is a component of the process;

performing information processing to execute the selected process based on the determined contents of processing; and

performing adaptive information processing, by storing said object, managing operation and status, and changing contents of the element or procedure described in the object based on the time information; wherein

in the object to be processed by said information processing apparatus, multiple different time-restricting ~~condition~~ conditions may be imposed on every uniquely identifiable element or procedure defined in the object; and

~~said determining step includes the step of selecting an appropriate process at a time of applying the time information.~~

31. (Currently amended) An information processing apparatus, comprising:

a memory, storing a set of instructions; and

a processor, configured to execute the stored set of instructions to perform the following method:

~~a determining unit configured to determine, on an object of which element or procedure can be described at least on information related to time, contents of the element or procedure of the object based on time information~~ and selects an appropriate process at a timing of applying the time information, wherein the object is a component of the process;

~~an execution unit configured to perform information processing~~ to execute the selected process based on the determined contents of processing; and

~~an object management unit configured to perform~~ adaptive information processing, by storing said object, manage operation and status, and change contents of the element or procedure described in the object based on the time information; wherein
in the object to be processed by said information processing apparatus, multiple different time-restricting condition-conditions may be imposed on every uniquely identifiable element or procedure defined in the object; and
~~said determining unit further selects an appropriate process at a timing of applying the time information.~~

32. (Currently Amended) A computer readable recording medium, recording an information processing program causing a computer to execute the steps of:

determining, on an object of which element or procedure can be described at least on information related to time, contents of the element or procedure of the object based on time information and selecting a process at a time of applying the time information, wherein the object is a component of the process;

performing information processing to execute the selected process based on the determined contents of processing; and

performing adaptive information processing, by storing said object, managing operation and status, and changing contents of the element or procedure described in the object based on the time information; wherein

in the object to be processed by said information processing apparatus, multiple different time-restricting condition-conditions may be imposed on every uniquely identifiable element or procedure defined in the object; and

~~said determining step includes the step of selecting an appropriate process at a time of applying the time information.~~